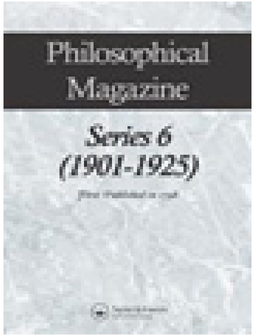

Philosophical Magazine Series 6

ISSN: 1941-5982 (Print) 1941-5990 (Online) Journal homepage: http://www.tandfonline.com/loi/tphm17

LXXXV. Intelligence and miscellaneous articles

To cite this article: (1910) LXXXV. Intelligence and miscellaneous articles , Philosophical Magazine Series 6, 19:113, 824-824, DOI: 10.1080/14786440508636861

To link to this article: http://dx.doi.org/10.1080/14786440508636861

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LXXXV. *Intelligence and Miscellaneous Articles.*

CORRECTION TO MR. H. BATEMAN'S PAPER ON THE REFLEXION OF LIGHT AT AN IDEAL PLANE MIRROR MOVING WITH A UNIFORM VELOCITY OF TRANSLATION.

ON p. 894 (vol. xviii. Dec. 1909) the equations should be

$$E_x'dy'dz'+E_y'dz'dx'+E_z'dx'dy'-cH_x'dx'dt'-cH_y'dy'dt'-cH_z'dz'dt'$$
$$=E_xdydz+E_ydzdx+E_zdxdy-cH_xdxdt-cH_ydydt-cH_zdzdt.$$

$$E_x'=E_x, \qquad H_x'=-H_x,$$
$$E_y'=-\frac{c^2+v^2}{c^2-v^2}E_y+\frac{2cv}{c^2-v^2}H_z, \qquad H_y'=\frac{c^2+v^2}{c^2-v^2}H_y+\frac{2cv}{c^2-v^2}E_z,$$
$$E_z'=-\frac{c^2+v^2}{c^2-v^2}E_z-\frac{2cv}{c^2-v^2}H_y, \qquad H_z'=\frac{c^2+v^2}{c^2-v^2}H_z-\frac{2cv}{c^2-v^2}E_y.$$

These give

$$E_y'-\frac{v}{c}H_z'=-\left(E_y-\frac{v}{c}H_z\right),$$
$$E_z'+\frac{v}{c}H_y'=-\left(E_z+\frac{v}{c}H_y\right),$$
$$H_y'+\frac{v}{c}E_z'=+\left(H_y+\frac{v}{c}E_z\right),$$
$$H_z'-\frac{v}{c}E_y'=+\left(H_z-\frac{v}{c}E_y\right),$$
$$H_x'=-H_x.$$

Relative to an observer moving with velocity v the components of the electric and magnetic force are

$$E_x, \quad \frac{E_y-\frac{v}{c}H_z}{\sqrt{1-\frac{v^2}{c^2}}}, \quad \frac{E_z+\frac{v}{c}H_y}{\sqrt{1-\frac{v^2}{c^2}}},$$
$$H_x, \quad \frac{H_y+\frac{v}{c}E_z}{\sqrt{1-\frac{v^2}{c^2}}}, \quad \frac{H_z-\frac{v}{c}E_y}{\sqrt{1-\frac{v^2}{c^2}}}.$$

Hence the above equations indicate that the sums of the tangential components of the electric force, and of the normal components of the magnetic force, relative to the moving observer are zero at the surface of the mirror. The conditions for a perfect reflector are thus satisfied.

H. BATEMAN.

Philosophical Magazine Series 6 1910.19:824-824.